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DIAMETER-CLASS VOLUME TABLES FOR CALIFORNIA OLD-GROWTH TIMBER

By

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Tables giving average tree volumes by breast-height diameter classes frequently may be used in timber cruising to save money, time, and men. Such tables may be appropriate in cruises of large areas having many trees, in low-intensity cruises warranting the sacrifice in accuracy that results from omission of individual tree height measurements, during wartime when men are scarce or when inexperienced cruisers have difficulty in estimating heights. In response to numerous recent requests from cruisers and forest land agencies, nine of the more important tables used by the Forest Service in California are here presented in diameter class form.

These tables are derived from the standard Region 5 (California) site class tables (separately identified in footnotes) by reading the volume for the tree of average height in each diameter class. The average heights, also given in the tables, were read from D.B.H. - merchantable height curves drawn from the original tree measurements used in constructing the site-class tables. The log rule used is the Scribner Decimal "C". The trees were scaled in 16-foot logs with 0.3 ft. trimming and 1.5 ft. stump allowances to a top diameter inside bark of 8 inches.

The only tables thus far converted to the diameter class form are for ponderosa pine, sugar pine, and white fir. From records in the California Forest and Range Experiment Station tables for several other species can be similarly converted if this first series proves to be satisfactory.

* MAINTAINED AT BERKELEY, CALIFORNIA, IN COOPERATION WITH THE UNIVERSITY OF CALIFORNIA.

VOLUME TABLES FOR CALIFORNIA OLD-GROWTH TIMBER

PONDEROSA PINE[1]

Board Feet - Scribner Decimal "C" Rule

D.b.h.	Site I - 175[2]		Site II - 150[2]		Site III - 125[2]		Site IV - 100[2]	
	Height[3]	Volume	Height[3]	Volume	Height[3]	Volume	Height[3]	Volume
Inches	16' logs	10 B.f.	16' logs	10 B.f.	16' logs	10 B.f.	16' logs	10 B.f.
12	1.7	5	2.1	7	1.8	7	1.1	3
14	2.4	10	2.9	13	2.6	14	1.9	8
16	3.0	15	3.5	20	3.2	21	2.6	14
18	3.6	23	4.0	29	3.7	30	3.2	22
20	4.2	33	4.5	39	4.1	40	3.7	32
22	4.8	48	4.9	54	4.4	53	4.1	44
24	5.3	64	5.3	69	4.7	68	4.4	59
26	5.8	83	5.7	90	5.0	87	4.6	75
28	6.3	106	6.1	114	5.2	108	4.8	98
30	6.7	136	6.4	142	5.4	133	5.0	115
32	7.1	173	6.7	174	5.6	163	5.2	144
34	7.5	213	7.0	210	5.8	193	5.4	172
36	7.9	256	7.3	250	6.0	226	5.6	206
38	8.3	303	7.6	293	6.2	261	5.8	237
40	8.7	355	7.8	336	6.4	302	5.9	268
42	9.0	406	8.0	382	6.6	345	6.0	309
44	9.3	464	8.2	434	6.8	393	6.1	349
46	9.6	527	8.4	492	7.0	446	6.2	400
48	9.8	588	8.6	554	7.2	504	6.3	446
50	10.0	653	8.8	621	7.3	556	6.4	492
52	10.2	722	9.0	692	7.4	613	6.5	531
54	10.4	796	9.2	769	7.5	675	6.6	582
56	10.5	870	9.4	856	7.6	742	6.7	627
58	10.6	948	9.5	938	7.7	813	6.8	677
60	10.7	1031	9.6	1025	7.8	888	6.8	729
62	10.8	1118	9.7	1117				
64	10.9	1206	9.8	1217				
66	11.0	1300	9.9	1324				
68	11.1	1394	10.0	1440				
70	11.2	1499	10.1	1562				
72	11.2	1590						

1/ Volumes for Sites I-175, II-150, and III-125 are from USFS site-class tables for Region 5 prepared by Duncan Dunning in 1922. Volumes for Site IV-100 are from Research Note No. 32, Calif. Forest and Range Exp. Sta., Taper and Volume Tables for Ponderosa Pine on Site IV-100 in California, by R. F. Keniston and V. A. Clements, Berkeley, Calif., May 10, 1943.

2/ Total height in feet of average dominant trees at 300 years. For description of site classes see Research Note No. 28, Calif. Forest and Range Exp. Sta., A Site Classification for the Mixed-Conifer Selection Forests of the Sierra Nevada, by Duncan Dunning, Berkeley, Calif., Dec. 1, 1942.

3/ To 8 inches top diameter, inside bark. To convert to height of top section above ground in feet, multiply the number of logs by 16.3 and add 1.5. Thus the average merchantable height of the 20-inch trees on Site I-175 is:
4.2 (16.3) + 1.5 = 70 feet.

VOLUME TABLES FOR CALIFORNIA OLD-GROWTH TIMBER

SUGAR PINE[1]

Board Feet - Scribner Decimal "C" Rule

D.b.h.	Site I - 175[2]		Site II - 150[2]	
	Height[3]	Volume	Height[3]	Volume
Inches	16' logs	10 B.f.	16' logs	10 B.f.
12	1.6	5	1.3	4
14	2.2	9	2.1	10
16	2.8	14	2.8	16
18	3.4	21	3.5	24
20	3.9	29	4.1	34
22	4.4	41	4.7	48
24	4.9	55	5.2	64
26	5.4	73	5.6	81
28	5.8	92	5.9	100
30	6.2	113	6.2	121
32	6.6	140	6.4	142
34	7.0	170	6.6	167
36	7.4	206	6.8	195
38	7.8	245	7.0	225
40	8.2	287	7.2	258
42	8.5	330	7.35	292
44	8.8	380	7.5	330
46	9.1	434	7.65	375
48	9.4	494	7.8	422
50	9.6	552	7.95	478
52	9.8	614	8.1	533
54	10.0	677	8.25	595
56	10.2	745	8.4	663
58	10.3	810	8.55	737
60	10.4	872	8.7	804
62	10.5	940	8.85	863
64	10.6	1014	9.0	918
66	10.7	1080	9.15	969
68	10.8	1150	9.3	1016
70	10.8	1210	9.4	1063
72	10.9	1277	9.5	1122
74	10.9	1337	9.6	1188
76	11.0	1409	9.7	1256
78	11.0	1473	9.8	1330
80	11.0	1540	9.9	1410
82	11.1	1622	10.0	1492
84	11.1	1690	10.1	1578
86	11.1	1758	10.2	1666
88	11.1	1823	10.3	1754
90	11.1	1892	10.4	1845
92	11.1	1962		
94	11.2	2052		
96	11.2	2123		
98	11.2	2199		
100	11.2	2275		

1/ Volumes are derived from USFS, Region 5, tables for Sites I and II, prepared by Duncan Dunning in 1925.

2/, 3/ See footnotes 2 and 3, ponderosa pine table, p. 2.

VOLUME TABLES FOR CALIFORNIA OLD-GROWTH TIMBER

WHITE FIR[1]

Board Feet - Scribner Decimal "C" Rule

D.b.h.	Site I - 175[2]		Site II - 150[2]		Site III - 125[2]	
	Height[3]	Volume	Height[3]	Volume	Height[3]	Volume
Inches	16' logs	10 B.f.	16' logs	10 B.f.	16' logs	10 B.f.
12	1.8	6	1.0	5	1.0	4
14	2.5	10	1.9	9	1.6	8
16	3.2	17	2.7	16	2.2	12
18	3.9	27	3.4	24	2.8	18
20	4.5	39	4.0	35	3.4	27
22	5.1	57	4.6	50	4.0	40
24	5.6	76	5.1	66	4.5	55
26	6.1	99	5.5	84	4.9	71
28	6.5	124	5.9	105	5.3	88
30	6.9	151	6.3	127	5.6	104
32	7.3	183	6.6	151	5.9	122
34	7.7	217	6.9	176	6.2	154
36	8.0	253	7.2	204	6.5	181
38	8.3	291	7.5	237	6.7	212
40	8.6	334	7.8	273	6.9	242
42	8.9	379	8.0	308	7.1	275
44	9.2	429	8.2	345	7.3	311
46	9.5	480	8.4	386	7.5	349
48	9.7	532	8.6	431	7.7	390
50	9.9	585	8.8	478	7.9	435
52	10.1	639	9.0	528	8.1	481
54	10.3	695	9.2	580	8.2	525
56	10.5	750	9.4	633	8.3	572
58	10.7	810	9.5	685	8.4	621
60	10.8	867	9.6	740	8.5	674
62	10.9	930	9.7	804		
64	11.0	990	9.8	861		
66	11.1	1051	9.9	934		
68	11.2	1108				
70	11.3	1158				
72	11.4	1220				

1/ Volumes for Sites I-175 and II-150 are from USFS, Region 5, site-class tables prepared by Donald Bruce in 1921. Volumes for Site III-125 are from the Region 5 Site III table prepared by Duncan Dunning in 1921.
2/, 3/ See footnotes 2 and 3, ponderosa pine table, p. 2.